

# The Five Ds: Securing the Nation's Aviation Infrastructure



*by Kevin Shertz, PE, Burns Engineering*

---

## ***Introduction***

Airports are undoubtedly a “critical infrastructure” in the United States. It’s a delicate balancing act to maintain an airport’s security infrastructure, while remaining mindful of the impacts security measures can have on passenger satisfaction and the quest for rapid and seamless travel.

An airport carries an intrinsic vulnerability, as it spans a very large area and contains multiple access points. Attempting to fortify the entire system is impractical for multiple reasons. A more adaptable and effective way to look at airport security is to consider multiple rings of defense.

“The Five D’s”: Deter, Detect, Deny, Delay, and Defend – is part of established security practice – and has relevant application in the design of an effective, layered airport security approach. Each plays a specific role in securing your aviation’s infrastructure. The following provides an overview of the key principles of 5D.

## ***Take Five***

**Deter.** One of the most interesting aspects of physical and electronic airport security is its relationship to the airport environment itself. Appropriate lighting, landscaping, and barrier protection provide deterrence, and make the airport an unattractive target. A good security design incorporates many layered security elements to help deter potential threats. Airports use public displays of security such as hydraulic vehicle barricades, warning striping at air operations area (AOA) gates, and K-9 security patrols at checkpoints.

**Detect.** Effective detection of potential security risks occurs both inside and outside the airport's perimeter. An initial risk assessment of an airport's perimeter can guide a thoughtfully coordinated and planned security design that utilizes multiple layers of technology. Layered technologies reduce false and nuisance alarms, and create redundancies to reduce the risk of human error. Technology is also used to automate risk detection and identification. Video analytics are also particularly helpful in early, effective detection, and can be used alongside TSA checkpoints.

**Deny & Delay.** Effective deny and delay of a potential threat can be enhanced by physical design features. If available, land can be used in many ways. For example, secure airside AOA perimeters can be located away from aircraft movements. Separation between public vehicles and airport facilities should be maintained for effective security measures. Inside the airport, terminal design is focused on the passenger experience and reduction of travel distance between passenger drop off and enplanement. Still, a small bollard-lined swath of space between the roadway and terminal, can be effective in limiting and delaying movement, without hindering the passenger experience.

**Defend.** Defense of the airport occurs when all other security measures have failed. Airports have coordinated plans in place for these situations, including mass evacuation. Security design can also help with defense. Many manufacturers offer software platforms that combine video analytics and image processing to identify persons of interest and "thumbnail" individuals as they pass through a camera view. In turn, not only can security and operations personnel locate people faster in the system, they can identify the individual's exact path.

## ***Security Can Create Seamless and Satisfying Experience***

Airport security no longer means passengers or airport operators are inconvenienced. In fact, implementation of a layered security approach, where available technologies are leveraged, can help create a seamless and satisfying customer experience. For example, video surveillance – often a cornerstone in many security applications – can use analytics like facial recognition, to inform intelligent business initiatives for airport operators and tenants.

**The bottom line:** A well-planned, comprehensive security system can help airports in their quest to Deter, Detect, Deny, Delay, and Defend, while minimizing vulnerability and supporting seamless passenger travel. And holistic design processes that combine both indoor and outdoor perimeters, similar to the 5Ds, will provide the most effective physical security systems.

---

### ***About the Author***

Kevin is the Director of Aviation Technology Services at Burns Engineering. His innovative nature is a perfect fit in the ever-evolving technology world, and helps him lead his team to create advanced and effective Information and Communications Technology solutions for his clients. His outside-the-box thinking and innate drive to use technology to simplify daily processes has made him a leader in the aviation industry. He has a passion for understanding the interworking of major airport and transportation technologies, and ensuring parties that have vested interests in them – airport authorities, tenants, concessions, and most importantly, the travelling public – operate smoothly, safely and efficiently.

### ***About Burns Engineering***

Burns Engineering provides differentiated professional engineering design and project management services for transportation, facilities, and infrastructure projects. They help their clients attain strategic goals and initiatives through successful large-scale infrastructure projects. More information about their aviation services can be found here: <https://www.burns-group.com/what-we-do/aviation/>